

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| Applicant(s): Huang, et al.  |                               |
| Application No.: 10/727,319  | Art Unit:<br>2116             |
| Filed: 12/3/2003   | Examiner:<br>SUGENT, JAMES F. |
| Title: METHOD AND SYSTEM FOR POWER<br>MANAGEMENT INCLUDING DEVICE<br>CONTROLLER-BASED DEVICE USE<br>EVALUATION AND POWER-STATE CONTROL |                               |
| Attorney Docket No.: AUS920030761US1   |                               |

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**RESPONSE TO NOTICE OF NON-COMPLIANT BRIEF UNDER M.P.E.P  
1205.03(B)**

Dear Sir:

This paper is submitted in response to the Notice of Non-compliant Appeal Brief mailed on March 12, 2007 in the above-identified application. Only an updated SUMMARY OF CLAIMED SUBJECT MATTER as recommended by M.P.E.P 1205.03(B) is supplied herein. In the Notice, the Examiner has requested that each independent claim must be mapped limitation by limitation to the Specification by page number and line number, and to the drawings by reference numeral. While Appellants note that 37 C.F.R. §41.37(c)(1)(v) only *requires* such limitation-by-limitation

analysis for means plus function or step plus function Claims, Appellants note that Discussion of Comments at 69 FR 49976 (Re: Comment 53) indicates that the level of conciseness of the SUMMARY OF CLAIMED SUBJECT MATTER is determined on a case-by-case basis. Therefore Appellants have supplied the following detailed analysis in compliance with the Examiner's request. Therefore, the following SUMMARY OF CLAIMED SUBJECT MATTER should not be construed as an admission that any of the elements recited in the present Claims are means plus function or step plus function claims, as none of the present Claims include means plus function or step plus function recitations.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The invention as recited in independent Claims 1 and 10 encompasses a device controller (Claim 1) and a processing system (Claim 10) in which device usage is measured by usage evaluators, and in which the state of the usage evaluators can be stored and retrieved from a location external to a device controller that contains the usage evaluators. The invention as recited in Claim 15 is a method of power management that performs usage evaluation within a device controller for devices controlled by the device controller. Upon a context switch deactivating a process, the state of the evaluation is stored. When the process is reactivated, the state is restored.

An exemplary embodiment of a device controller as recited in Claim 1 is illustrated in the form of a memory controller 14 as shown in Figure 2. Memory controller 14 includes the following elements that illustrate one example of each of the elements of Claim 1:

a command unit for sending commands to one or more devices (access control/command logic 21 as described in the Specification at p. 13, lines 6-7),

a usage evaluator having an input coupled to an output of said command unit for evaluating a frequency of use of an associated controlled device (e.g., inter-arrival time evaluator 25A as described in the

Specification at pg. 14, lines 12-14 and at pg. 15, lines 9-12),

control logic coupled to the usage evaluator and further coupled to an input of said command unit (command unit 32 within usage evaluator 25A as shown in Figure 3 as described in the Specification at pg. 15 lines 12-13, in combination with access/control command logic 21 and pg. 13 at lines 6-8) for sending power management commands in response to the usage evaluator detecting that a usage level of said associated device has fallen below a threshold level(See the Specification at pg. 15 line 33 through pg. 16, line 10),

an output port (control I/O port 29 and storage registers and I/O interface 27) coupled to the usage evaluator for reading a state of the usage evaluator, whereby a state of the usage evaluator may be stored external to the device controller (As described in the Specification at pg. 14, line 26-32),

and an input port (control I/O port 29 and storage registers and I/O interface 27) coupled to the usage evaluator for setting a state of the usage evaluator, whereby the state of the usage evaluator may be restored from information stored external to the device

controller(As described in the Specification at pg. 14,  
line 33 through pg. 15, line 3).

An exemplary embodiment of a processing system as recited in Claim 10 is illustrated in Figure 1 and includes a memory controller 14 as shown in Figure 2. The exemplary processing system includes the following elements that illustrate one example of each of the elements of Claim 10:

- a processor (exemplified by processor core 10 and as described in the Specification at pg. 9, lines 7-12),

- a memory coupled to the processor for storing program instructions and data values (exemplified by DRAM array 15 as described in the Specification at pg. 9, line 26 through pg. 10, line 1),

- a device controller coupled to the processor (exemplified by memory controller 14 as described above with respect to Claim 1);

- one or more controlled devices coupled to the device controller (exemplified by DIMMS 15A-15D), wherein the controlled devices have multiple power management states (as described in the Specification at pg. 10 lines 2-11), and wherein the device controller

includes...whereby the state of said at least one usage evaluator may be restored from the memory.<sup>1</sup>

An exemplary embodiment of a method as recited in Claim 15 is illustrated in the flowchart of Figure 4. The exemplary method includes the following elements that illustrate one example of each of the elements of Claim 15:

sending power management setting information for devices controlled by a device controller to a device controller (power management settings received by the device controller in step 40 of Figure 4 are described as received, for example, from processor core 10 in the Specification at pg. 13, lines 11-14),

evaluating a usage of each of the controlled devices within the device controller in order to determine whether or not the usage has fallen below a threshold (as exemplified by step 43 and decision block 44 of Figure 4 as described in the Specification at pg. 16, lines 18-20),

sending power management commands from the device controller to the controlled devices in conformity with a result of the determining, whereby the device

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<sup>1</sup> Repetition of the features of the device controller element and citations to the Specification and Figures are omitted for brevity. However, the features described above with respect to Claim 1 are illustrative of the features of the device controller as recited in Claim 10.

controller manages a power management state of the controlled devices without processor intervention (as exemplified by step 45 of Figure 4, as described in the Specification at pg. 16, lines 20-22),

receiving an indication of a context switch activating a second process and deactivating a first process (as exemplified by decision block 46 and as described in the Specification at pg. 16, line 23),

in response to said receiving, saving a state of said evaluating (as exemplified by step 47 and as described in the Specification at pg. 16, line 24-25),

second receiving a second indication of a second context switch reactivating said first process (as exemplified by decision block 46 and as described in the Specification at pg. 16, line 23); and

in response to the second receiving, restoring the saved state of the evaluating, whereby the evaluating commences from the previously stored state (as exemplified by step 48 and as described in the Specification at pg. 16, line 25-26).

None of the Claims include means-plus-function or step-plus-function limitations under 35 U.S.C. §112, ¶6.

**REMARKS**

Appellants believe that the above Summary is compliant with 37 C.F.R. §43.37(c)(1)(v) and the Examiner's further requirements in the Notice, and therefore believe that the Appeal Brief is now compliant and that the Examiner's finding of defect in the Appeal Brief has been overcome.

No fee or extension of time is believed to be required with this submission; however, in the event an additional fee or extension of time is required, please charge that fee or extension of time requested to IBM Deposit Account 09-0447.

Respectfully Submitted,

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